



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/761,754	01/20/2004	Jung Sig Jun	2080-3-222	2869
7590 11/30/2005				
Jonathan Y. Kang, Esq. Lee A. Hong P.C. 14th Floor 801 South Figueroa Street Los Angeles, CA 90017		EXAMINER FLANAGAN, KRISTA M		
		ART UNIT 2817 PAPER NUMBER		
DATE MAILED: 11/30/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/761,754

Applicant(s)

JUN, JUNG SIG

Examiner

Krista M. Flanagan

Art Unit

2817

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 September 2005.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10-15 is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 4-9 is/are rejected.
- 7) ☒ Claim(s) 3 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

### ***Terminal Disclaimer***

1. The terminal disclaimer filed on 27 September 2005 disclaiming the terminal portion of any patent granted on this application, which would extend beyond the expiration date of any patent granted on Application Number 10/773,041 has been reviewed and is NOT accepted.

The application/patent being disclaimed has been improperly identified since the number used to identify the application being disclaimed is incorrect. The correct number is 10/773,041.

### ***Double Patenting***

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1, 2 and 4-9 are provisionally rejected under the judicially created doctrine of double patenting over claims 1-7, 8 and 9 respectively of copending Application No. 10/773,041 ('041). This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

4. The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows:

- a. Regarding claim 1, the same digital television receiver is claimed in both applications (claim 1 of the '041 patent application).
- b. Regarding claim 2, the current application fails to use the phrase transmitted in a VSB modulation type but per ATSC standard all US digital television broadcasts will be transmitted in a VSB modulation type (claim 2 of the '041 patent application).
- c. Regarding claim 4, the same matter is claimed in both applications (claim 3 of the '041 patent application).
- d. Regarding claim 5, the same matter is claimed in both applications (claim 4 of the '041 patent application).
- e. Regarding claim 6, the same matter is claimed in both applications (claim 5 of the '041 patent application).
- f. Regarding claim 7, the same matter is claimed in both applications (claim 6 of the '041 patent application).
- g. Regarding claim 8, the '041 refers to a first and second squaring operator and an adder while the current application, claim 8, refers to a squarer where the squarer is the first and second squaring operators and the adder.
- h. Regarding claim 9, the same matter is claimed in both applications (claim 9 of the '041 patent application).

Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

The chart below summarizes the double patenting issues.

Claim	Current Application	'041 Application	Claim
1	A digital TV receiver, comprising: an A/D converter for converting an analog signal into a digital signal; a carrier recovery for converting the digital passband signal into a digital baseband signal; and a symbol clock recovery for converting digital real/imaginary baseband component signals into OQAM type of real/imaginary component signals, detecting timing error information by <b>high-passband-filtering, squaring, and adding the OQAM real/imaginary signals</b> , and for generating and outputting at least two times the frequency of the symbol clock corrected from the detected timing error information.	A digital TV receiver, comprising: an A/D converter for converting an analog signal into a digital signal; a carrier recovery for converting the digital pass-band signal into a digital base-band signal; and a symbol clock recovery for converting digital real/imaginary base-band component signal into OQAM type of real/imaginary component signals, detecting timing error information by <b>performing the high pass-band filtering on the OQAM real/imaginary signals, and squaring and adding the filtered value</b> , and for generating and outputting at least two times the frequency of the symbol clock corrected from the detected timing error information. <b>No change in function or parts.</b>	1
2	The digital TV receiver of claim 1, wherein the A/D converter converts the	The digital TV receiver of claim 1, wherein the A/D converter converts the	2

	analog passband signal into a passband signal by sampling the analog signal at a fixed frequency generated from the fixed oscillator or at least two times the frequency of the symbol clock.	analog pass-band signal <b>transmitted in a VSB modulation type</b> into a pass-band signal by sampling the analog signal at a fixed frequency generated from the fixed oscillator or at least two times the frequency of the symbol clock.  <b>A VSB modulation type, per ATSC standard, is in use for all digital television broadcasts.</b>	
<b>4</b>	The digital TV receiver of claim 1, wherein the carrier recovery multiplies the digital passband signal by a standard carrier signal through the carrier recovery process for converting the signal into the digital baseband signal.	The digital TV receiver of claim 1, wherein the carrier recovery multiplies the digital pass-band signal by a standard carrier signal <b>generated</b> through the carrier recovery process for converting the signal into the digital base-band signal. <b>No change in function or parts.</b>	<b>3</b>
<b>5</b>	The digital TV receiver of claim 1 further comprises a resampler for resampling the digital real/imaginary baseband signals to at least two times the frequency of the symbol clock frequency, and interpolating each of the signals.	The digital TV receiver of claim 1 further comprises a resampler for resampling the digital real/imaginary base-band signals to at least two times the frequency of the symbol clock frequency, and interpolating each of the	<b>4</b>

		signals. <b>No change in function or parts.</b>	
6	<p>The digital TV receiver of claim 5, wherein the symbol clock recovery comprises: an OQAM converter for converting each of the digital baseband real/imaginary signals interpolated and outputted from the resampler into OQAM real/imaginary component signals; a high pass filter performing a high-passband-filtering to the OQAM real/imaginary component signals outputted from the OQAM converter for removing information of data section; a squarer for squaring each of the OQAM real/imaginary component signals filtered by and outputted from the high passband filter, and adding and outputting the calculation; a pre-filter for passing only a frequency of a particular band to recover the symbol clock from the output of the squarer; a timing error detector for detecting timing error information from</p>	<p>The digital TV receiver of claim 5, wherein the symbol clock recovery comprises: an OQAM converter converting each of the digital base-band real/imaginary signals interpolated and outputted from the resampler into OQAM real/imaginary component signals; a high pass filter performing a high pass-band filtering on the OQAM real/imaginary component signals outputted from the OQAM converter for removing information of data section, a squarer squaring each of the OQAM real/imaginary component signals filtered by and outputted from the high pass-band filter, and adding and outputting the calculation; a pre-filter passing only a frequency of a predetermined band from the output of the squarer for recovering the symbol clock; a timing error detector detecting</p>	5

	the output of the pre-filter; a filtering member for filtering only the low passband signal from the timing error information outputted from the timing error detector; and an NCO for generating at least two times the frequency of the symbol clock <b>recovered</b> according to low passband signals of the filtered timing error information and outputting to the first resampler.	timing error information from the output of the pre-filter; a filtering member filtering only a low pass-band signal from the timing error information outputted from the timing error detector; and an NCO generating at least two times the frequency of the symbol clock <b>interpolated</b> according to low pass-band components of the filtered timing error information and outputting to the first resampler. <b>Interpolated and recovered are synonymous here. No change in function or parts.</b>	
7	The digital TV receiver of claim 6, wherein the OQAM converter multiplies digital baseband real/imaginary component signals interpolated and outputted from the resampler by a fixed frequency with a center frequency of 2.690559 MHz for converting digital baseband real/imaginary component signals into the OQAM real/imaginary	The digital TV receiver of claim 6, wherein the OQAM converter multiplies digital base-band real/imaginary component signals interpolated and outputted from the resampler by a fixed frequency with a center frequency of 2.690559 MHz for converting digital base-band real/imaginary component signals into the OQAM real/imaginary	6



	component signals.	component signals. <b>No change in function or parts.</b>	
<b>8</b>	<p>The digital TV receiver of claim 1, wherein the symbol clock recovery comprises: an OQAM converter for converting each of the digital baseband real/imaginary signals outputted from the carrier recovery into OQAM real/imaginary component signals; a high pass filter performing a high-passband-filtering to the OQAM real/imaginary component signals outputted from the OQAM converter for removing information of data section; <b>a squarer for squaring each of the OQAM real/imaginary component signals filtered by and outputted from the high passband filter, and adding and outputting the calculation;</b> a pre-filter for passing only a frequency of a particular band to recover the symbol clock from the output of the squarer; a</p>	<p>The digital TV receiver of claim 1, wherein the symbol clock recovery comprises: an OQAM converter converting each of the digital base-band real/imaginary signals outputted from the carrier recovery into OQAM real/imaginary component signals; a high pass filter performing a high pass-band filtering on the UQAM real/imaginary component signals outputted from the OQAM converter for removing information of data section; <b>a first squaring operator squaring each of the OQAM real/imaginary component signals filtered by and outputted from the high pass filter, and calculating difference of the two squared signals and squaring the calculation; a second squaring operator squaring each of the OQAM real/imaginary component</b></p>	<b>8</b>

	<p>timing error detector for detecting timing error information from the output of the pre-filter; a filtering member for filtering only the low passband signal from the timing error information outputted from the timing error detector; and an NCO for generating at least two times the frequency of the symbol clock recovered according to low passband signals of the filtered timing error information and outputting to the first resampler.</p>	<p><b>signals filtered by -an outputted from the high pass filter, and calculating and squaring a difference of the two squared signals; an adder adding the output of the first and second squaring operators; a pre-filter passing only a frequency of a predetermined band for recovering the symbol clock from the output of the adder; a timing error detector detecting timing error information from the output of the pre-filter; a filtering member filtering only the low pass-band signal from the timing error information outputted from the timing error detector; and an NCO for generating at least two times the frequency of the symbol clock recovered according to low pass-band signals of the filtered timing error information and outputting to the first resampler. Where the squarer in the current application is the first and second squaring</b></p>	
--	---	--	--

		<b>operators and the adder in the '041 application. The output of the squarer is the output of the adder because the adder is the last step in the squaring operator. No change in function or parts.</b>	
<b>9</b>	The digital TV receiver of claim 8, wherein the OQAM converter multiplies the VSB digital baseband real/imaginary component signals outputted from the carrier recovery by the fixed frequency with a center frequency of 2.690559 MHz for converting the VSB digital baseband real/imaginary component signals into the OQAM real/imaginary component signals.	The digital TV receiver of claim 8, wherein the OQAM converter multiplies the VSB digital base-band real/imaginary component signals outputted from the carrier recovery by the fixed frequency with a center frequency of 2.690559 MHz for converting the VSB digital base-band real/imaginary component signals into the OQAM real/imaginary component signals. <b>No change in function or parts.</b>	<b>9</b>

*Response to Arguments*

5. Applicant's arguments, see the amendment filed 27 September 2005, with respect to claims 10-15 have been fully considered and are persuasive. The rejections of claims 10-15 have been withdrawn.

*Allowable Subject Matter*

6. Claims 10-15 are allowed.

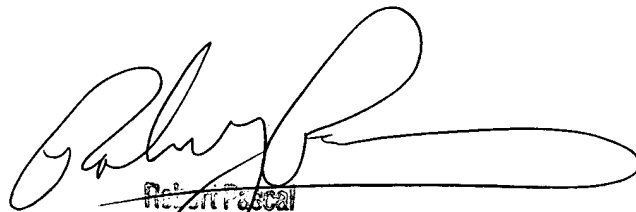
*Conclusion*

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krista M. Flanagan whose telephone number is (571) 272-2203. The examiner can normally be reached on Monday - Friday, 8 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert J. Pascal can be reached on (571) 272-1769. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

K. Flanagan  
20051123



Robert J. Pascal  
Supervisory Patent Examiner  
Technology Center 2800